

REPORT  
PROJECT: 135142-6.04-01

# ENVIRONMENTAL NOISE IMPACT ASSESSMENT HERON GATE 5 - PHASE 1

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Prepared for Hazelview Investments  
by IBI Group

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# 1 Introduction

This Environmental Noise Impact Assessment has been prepared in support of a Site Plan Control application for a proposed mid-rise residential development at 2851 Baycrest Drive within the Heron Gate neighbourhood of Ottawa, referred to as Heron Gate 5 – Phase 1. The subject site is located at the southwest corner of the Heron Road & Sandalwood Drive intersection, and is approximately 1.2 hectares in size. This study evaluated the transportation-related noise impacts within the development and recommended any warning clauses and associated noise abatement measures required in the Tenancy Agreement for each dwelling unit.

The proposed development consists of two 7-storey and one 6-storey apartment building joined by an underground parking garage which are referred to herein as Buildings 'A', 'B' and 'C'. The analysis in this study focused primarily on the noise impacts associated with Buildings 'A' and 'C' which directly front or flank onto Heron Road.

The site location and its surrounding context is shown in **Figure 1** below.

Figure 1 – Site Location



## 2 Background

### 2.1 Noise Sources

The proposed development is primarily subjected to roadway noise from the Heron Road and Briar Hill Drive. There are no other collector or higher-order roadways within close enough proximity to generate noise sources of any significance within the site.

The subject development is located outside of the Airport Vicinity Development Zone (AVDZ) as defined in Schedule C14 of the 2021 Official Plan. As such, no consideration will be given to aircraft noise in this study.

A desktop review within a 500-metre radius of the subject site did not identify any rail lines, therefore this study did not explicitly account for rail noise.

### 2.2 Sound Level Limits for Road & Rail Traffic

Sound level criteria for road traffic were extracted from the ENC Guidelines. Noise levels are expressed in the form Leq (T) which refers to a weighted level of a steady sound carrying the same total energy in the time period T (in hours) as the observed fluctuation sound.

#### 2.2.1 Indoor sound level criterion – ventilation and warning clause requirements

The recommended indoor sound level criteria from Table 2.2b of the ENC Guidelines are as follows:

- Bedrooms – 23:00 to 07:00 – 40 dBA Leq (8 hours)
- Living Room – 07:00 to 23:00 – 45 dBA Leq (16 hours)

The sound levels are based on the windows and doors to an indoor space being closed.

As discussed previously, the proposed development consists of three, mid-rise buildings. For the purpose of assessing the highest noise level exposure at the building face, receptor locations were assumed at 19.5 metres above the ground for the plane of the living room and bedroom windows for Buildings 'A' and 'B' (7 storeys) and 16.5 metres for Building 'C' (6 storeys).

In accordance with NPC-300 C7.1.3, if the daytime outdoor sound levels exceed 65 dBA at the living room window or if the nighttime sound levels exceed 60 dBA at the bedroom window, then the building must be compliant with the Ontario Building Code. Should the outdoor sound levels exceed this criteria, then the building component (walls, windows, etc.) must be designed to achieve indoor sound level criteria.

As per NPC-300 C7.1.2.1 and C7.1.2.2, when the outdoor noise levels are greater than 55 dBA and less than or equal to 65 dBA at the living room window and/or greater than 50 dBA and less than or equal to 60 dBA at the bedroom window, then a warning clause is compulsory. This warning clause specifies that forced air heating with a provision for central air conditioning is required. Should the outdoor sound levels exceed the criteria, central air conditioning is mandatory, and a warning clause is required.

#### 2.2.2 Outdoor sound level criterion

As per Table 2.2a of the ENC Guidelines, the sound level criteria for the outdoor living area (OLA) during the daytime (i.e. 07:00 and 23:00 hours) is 55 dBA Leq (16). Sound levels for the OLA are calculated 3 metres from the building face at the centre of the façade, or in the middle of the OLA at a height of 1.5 metres above the ground/elevated terrace.

If the Leq sound level is less than or equal to the above criteria, then no further action is required by the proponent. If the sound level exceeds the criteria by less than 5 dBA then the developer may, with City approval, either provide a warning clause to prospective tenants or install physical attenuation. For sound levels greater than 5 dBA above the criteria control measures are required to reduce the noise levels as close to 55 dBA as technically, economically and administratively possible. Should the sound levels with the barrier in place exceed 55 dBA a warning clause is also required.

### **2.2.3 Indoor Sound Level Criterion – Building Components**

As per NPC-300 C7.1.3 when the outdoor sound levels are less than or equal to 65 dBA at the living room window and/or less than or equal to 60 dBA at the bedroom level then the building must be compliant with the Ontario Building Code. Should the outdoor sound levels exceed these criteria, then the building component (walls, windows etc.) must be designed to achieve indoor sound level criteria.

## 3 Roadway Noise

### 3.1 Road Traffic Data

Based on the configuration of the road transportation network with respect to the proposed development, it is assumed that the major sources of transportation noise impacting the site will originate from Heron Road and Briar Hill Drive, both of which are described below:

#### Heron Road

Heron Road is classified as a four-lane, divided arterial road under the jurisdiction of the City of Ottawa along the site's northern property boundary. Within the study area, this arterial road has a posted speed limit of 50km/h.

#### Sandalwood Drive/Briar Hill Drive

Sandalwood Drive is identified as a local road under the jurisdiction of the City of Ottawa along the site's eastern property boundary. North of Heron Road, Sandalwood Drive becomes Briar Hill Drive which is classified as a two-lane urban collector road (2-UCU).

Traffic volume parameters for both Heron Road and Briar Hill Drive were extracted from Part 4: Appendix B of the ENC Guidelines and are presented in **Table 3.1** below.

TABLE 3.1 – TRAFFIC AND ROAD DATA SUMMARY

	HERON ROAD (4-UAD)	BRIAR HILL DRIVE (2-UCU)
Annual Average Daily Traffic (AADT)	35,000	8,000
Posted Speed Limit (km/h)	50	50
% Medium Trucks	7%	7%
% Heavy Trucks	5%	5%
% Daytime Traffic	92%	92%

It should be noted that Baycrest Drive, which is identified in the Official Plan as a collector road, is separated from the subject site by a significant distance of at least 120 metres. As such, the transportation-related noise impacts from this road were not considered in the analysis conducted for this study.

### 3.2 Calculation Methods

Roadway noise was calculated using the STAMSON 5.04 computer program from the Ontario Ministry of the Environment, with the transportation-related noise sources from Heron Road and Briar Hill Drive simulated according to the parameters described in the preceding section.

Unattenuated daytime and nighttime noise levels at the building face, calculated to determine indoor sound levels, are presented in **Table 3.2** below. Parameters used for calculating the noise levels, including the perpendicular distance from the source to receiver and the roadway segment angles are also indicated. Given that Heron Road consists of a four-lane, divided arterial road, the noise levels were modelled separately for east- and westbound directions and then combined.

In the situation where the arrangement of the buildings is a mirror image of one of the scenarios tested below, it was deemed unnecessary to repeat the calculation, as the STAMSON program will produce the same overall result.

As indicated on **Noise Plan – Drawing No. 135142-N1**, each building will have one or more shared rooftop terrace amenity areas which satisfy the definition of an 'outdoor living area' (OLA)

from the ENC Guidelines. An analysis of the OLA for Buildings 'A', 'B', and 'C' is presented in **Table 3.3** below.

The noise levels for each rooftop terrace area with the highest exposure to traffic noise from Heron Road were evaluated at locations 'OLA-1' (7<sup>th</sup> Level Terrace for Building 'A'), 'OLA-2' (8<sup>th</sup> Level Terrace for Building 'B') and 'OLA-3' (7<sup>th</sup> Level Terrace for Building 'C'), as indicated on the Noise Plan. The ENC Guidelines specify that the OLA midpoint measured at a height of 1.5m above the ground level should be used to assess the noise impacts associated with this type of amenity area. In the noise modelling for the outdoor amenity areas, the proposed building facades were considered as noise barriers which significantly reduced the impacts of traffic noise within the elevated terraces closest to Heron Road.

STAMSON noise calculations conducted for this study are included in **Appendix A**.

TABLE 3.2 – UNATTENUATED NOISE LEVELS AT BUILDING FACE (INDOOR)

LOCATION	ROADWAY	SOURCE RECEIVER DISTANCE (M)	NOISE ANGLES		NOISE (dBA)	
			LEFT	RIGHT	DAYTIME	DAYTIME
Building A – P1	Heron EB	29.5	-65	0	63.59	55.99
Building A – P1	Heron WB	41.0	-65	0		
Building A – P2	Heron EB	20.5	-85	0	66.16	58.57
Building A – P2	Heron WB	32.0	-85	0		
Building A – P3	Heron EB	19.5	-90	90	69.76	62.17
Building A – P3	Heron WB	31.0	-90	90		
Building A – P3	Briar Hill	15.0	-90	-65		
Building A – P4	Heron EB	55.0	0	40	58.82	51.23
Building A – P4	Heron WB	66.5	0	40		
Building A – P5	Heron EB	90.5	0	20	53.58	45.99
Building A – P5	Heron WB	102.0	0	20		
Building B – P6	Heron EB	66.0	-15	10	56.00	48.41
Building B – P6	Heron WB	77.5	-15	10		
Building C – P7	Heron EB	29.5	-90	0	64.25	56.66
Building C – P7	Heron WB	41.0	-90	0		
Building C – P8	Heron EB	20.5	-90	0	65.93	58.34
Building C – P8	Heron WB	32.0	-90	0		
Building C – P9	Heron EB	19.5	-90	90	69.17	61.57
Building C – P9	Heron WB	31.0	-90	90		

As indicated in **Table 3.2** above, the daytime noise exceeds 55 dBA at numerous locations above.



TABLE 3.3 – UNATTENUATED NOISE LEVELS AT OLA

LOCATION	ROADWAY	SOURCE RECEIVER DISTANCE (M)	NOISE ANGLES		DAYTIME NOISE (DBA)
			LEFT	RIGHT	
Building 'A' – OLA-1 7 <sup>th</sup> Level Terrace	Heron EB	31.5	-90	90	55.14
	Heron WB	43.0	-90	90	
	Briar Hill	24.5	-90	-55	
Building 'B' – OLA-2 8 <sup>th</sup> Level Terrace	Heron EB	69.5	-90	90	48.42
	Heron WB	81.0	-90	90	
Building 'C' – OLA-3 7 <sup>th</sup> Level Terrace	Heron EB	25.5	-90	90	59.10
	Heron WB	37.0	-90	90	

As indicated in **Table 3.3** above, the daytime noise levels are expected to exceed the 55 dBA at locations 'OLA-1' and 'OLA-3' from **Noise Plan – Drawing No. 135142-N1**, while 'OLA-2' remains below this threshold. The need for noise abatement measures at 'OLA-1' and 'OLA-3' is discussed in subsequent sections of this study.

Given that the 8<sup>th</sup> Floor Terrace for Building 'A' is set back further from Heron Road in comparison with location 'OLA-1' which only slightly exceeded the 55 dBA noise threshold, no analysis of this additional outdoor amenity area for Building 'A' was required for this study. Further, the most open and usable portion of 8<sup>th</sup> Floor Terrace for Building 'A' will be screened from Heron Road by the Mechanical Room and will therefore help to mitigate any potential transportation-related noise impacts as well.

## 4 Abatement Measures

### 4.1 Indoor Sound Levels

As identified in **Table 3.2** above, dwelling units on the north façade of Buildings 'A' and 'C' have direct exposure to noise from Heron Road and are expected to exceed 65 dBA during the daytime or 60 dBA during the nighttime. As such, mandatory central air conditioning, a review of building components are required, as well as a Type 'D' warning clause on the Tenancy Agreement for each north-facing unit.

For dwelling units on the east or west façades of either Building 'A' or 'C', which will be indirectly exposed to noise from Heron Road, daytime noise levels were determined to be less than 65 dBA but are still expected to exceed 55 dBA (or nighttime noise level are less than 60 dBA but exceed 50 dBA). As such, an alternative means of ventilation is required, as well as a Type 'C' warning clause in the Tenancy Agreement for each north- or south-facing unit. Alternative means of ventilation usually consist of a forced air heating system with ducts sized for future installation of central air conditioning.

### 4.2 Outdoor Living Area

As per **Table 3.3** in Section 3.2, the OLAs exceed 55 dBA at locations 'OLA-1' and 'OLA-3' but remain below 60 dBA, the threshold at which physical attenuation is typically recommended. Given the nature of the outdoor amenity area (i.e. elevated terrace) and the significant screening from traffic noise which is already achieved by setting these amenity areas back from the northern facades of Buildings 'A' and 'C', it is recommended that warning clause Type 'A' be applied to the Tenancy Agreements for all dwelling units within Buildings 'A' and 'C' in lieu of a noise barrier.

## 4.3 Building Components

Based on the results of the indoor noise assessment in **Table 3.2**, an analysis of the required building components for dwelling units expected to experience noise levels at the building face exceeding 65 dBA has been conducted following the Sound Transmission Class (STC) Method. This method was developed by the National Research Council (NRC), and involves a review of architectural plans to determine appropriate design assumptions (i.e. window/floor area ratios) to calculate the STC rating for windows and glazed doors.

Based on sample architectural drawings provided for north-facing dwelling units contained in either Buildings 'A' or 'C', the STC ratings under both daytime and nighttime conditions were calculated with respect to the top floor units. This methodology is consistent with the remainder of the noise analysis conducted for this study and assumed the highest daytime and nighttime noise levels to determine the required STC rating.

The STC calculations were conducted to determine the required STC rating for exterior windows based on noise levels determined from the indoor noise analysis. Exterior walls were assumed to have an STC rating of 50, which is a conservative value for a reinforced concrete structure designed to accommodate Ottawa winters. With the exterior walls in place, the amount of sound energy absorbed by the windows was calculated and the STC rating required to meet the sound criteria was determined. Interior partitioning for each dwelling unit is not indicated on the architectural drawings, therefore the entire floor area for the top floor dwelling unit at the northeast corner of Building 'A', which represents the unit with the highest exposure to traffic noise throughout the subject development, was evaluated for the calculations of the STC rating under daytime and nighttime conditions.

All rooms were assumed to have an intermediate absorptive interior rather than a hard or very absorptive interior, as would be expected for a residential unit. As indicated in **Table 4.1** below, the maximum required STC rating for the largest front-facing windows and glazed doors was calculated to be 27 and was conservatively based on the expected noise levels within closest proximity to the Heron & Briar Hill intersection. Given that the 65 dBA threshold is also exceeded on the east and west facades of Buildings 'A' and 'C' at a 1.0-metre setback from the northern facades, the STC ratings should also be applied on these walls as well.

STC calculations and sample architectural plans for the highest-exposed facades of Buildings 'A' or 'C' are included in **Appendix B** and **Appendix C**, respectively.

TABLE 4.1: SOUND TRANSMISSION CLASS (STC) RATINGS

DWELLING UNIT	ROOM TYPE	REQUIRED STC RATING FOR WINDOWS & GLAZED DOORS
Buildings 'A' & 'C' North, East & West Facades	Living Room	27
	Bedroom	24

## 5 Summary of Attenuation Measures

### 5.1 Warning Clauses

A clause regarding noise must appear on the Tenancy Agreement for the dwelling units indicated on the **Noise Plan - Drawing No. 135142-N1**:

<b>Type 'A'</b>	All Units in Buildings 'A' and 'C'
<b>Type 'C'</b>	Building 'A' – East or West-Facing Dwelling Units <sup>1</sup> Building 'B' – Dwelling Units at Northeast Corner Building 'C' – East or West-Facing Dwelling Units <sup>1</sup>
<b>Type 'D'</b>	Buildings 'A' and 'C' – All Dwelling Units with a North-Facing Exterior Wall

Note: <sup>1</sup> Applies to dwelling units without a north-facing exterior wall.

The following warning clauses are taken from Section C8.1 of NPC-300 Guidelines.

<b>Type 'A'</b>	"Purchasers/tenants are advised that sound levels due to increasing Heron Road and Briar Hill Drive traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment's noise criteria."
<b>Type 'C'</b>	"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
<b>Type 'D'</b>	"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

### 5.2 Ventilation Requirements and Building Components

All dwelling units with a Type 'C' warning clause listed in Section 5.1 require a forced air heating system sized to accommodate a central air conditioning system.

All dwelling units with a Type 'D' warning clause require mandatory central air conditioning and an acoustical review of building components.

## 6 Conclusion

This Environmental Noise Impact Assessment was conducted in support of a Site Plan Control application for a proposed mid-rise residential development at 2851 Baycrest Drive in the Heron Gate neighbourhood of Ottawa. This study evaluated the impact of transportation-related noise on the proposed development and, based on the analysis conducted for this study, it is expected that noise levels will remain within the standards established by the City of Ottawa and Ministry of the Environment (MOE) with the exception of select units identified on **Drawing No. 135142-N1**. For these dwelling units, appropriate warning clauses and associated noise abatement measures must be provided on the Tenancy Agreement. Sound Transmission Class (STC) ratings for windows and glazed doors are provided for dwelling units with the highest exposure to Heron Road.

## 7 Professional Authorization

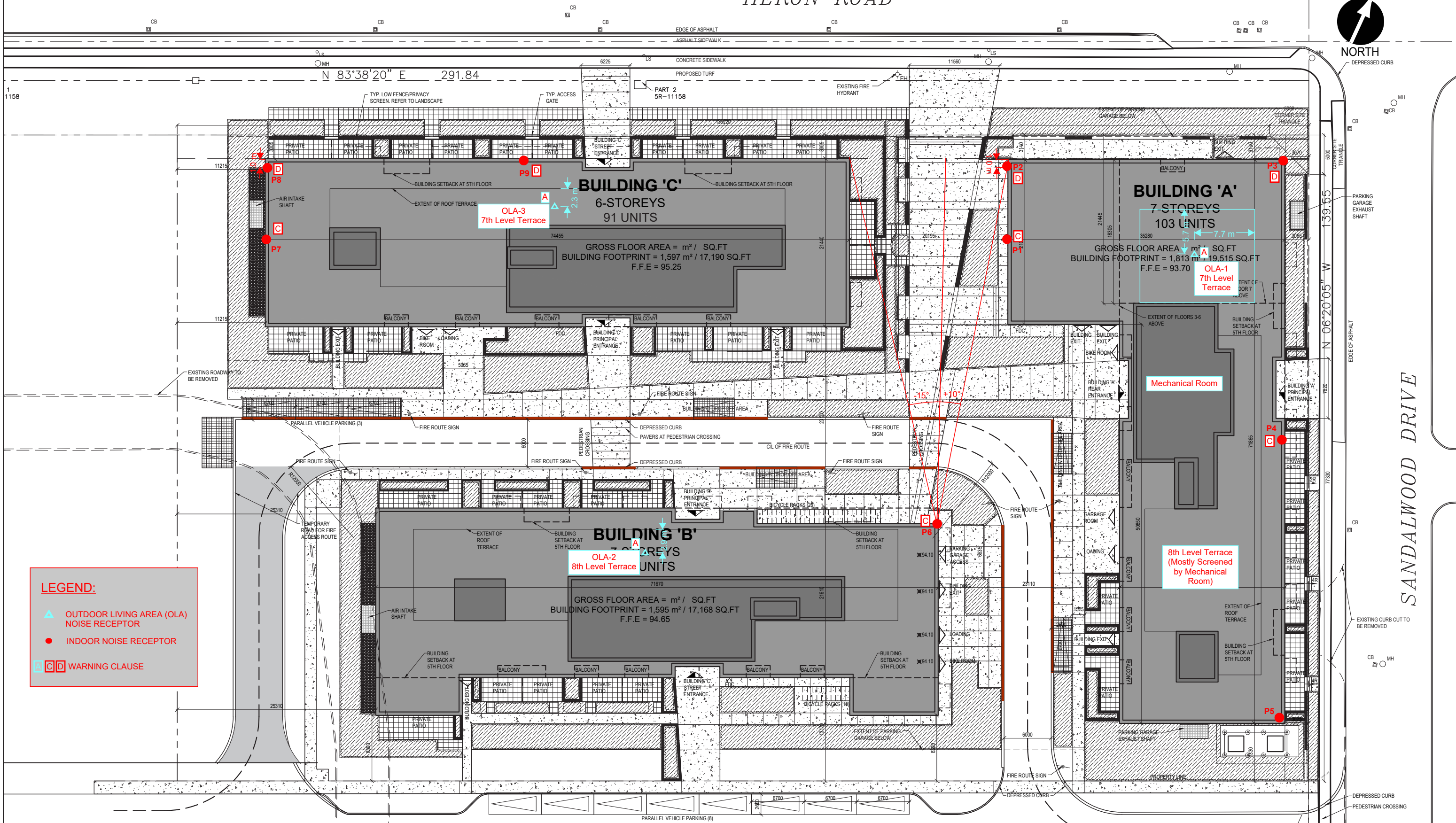
Prepared by:



Ben Pascolo-Neveu, P. Eng.



NORTH



## **Appendix A –**

### **STAMSON Noise Calculations**

## Indoor Noise at Building Face

Filename: bap1.te                      Time Period: Day/Night 16/8 hours  
Description: building a pl indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -65.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 29.50 / 29.50 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -65.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 41.00 / 41.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 61.31 + 0.00) = 61.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	0	0.12	69.15	0.00	-3.29	-4.55	0.00	0.00	0.00	61.31

Segment Leq : 61.31 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 59.70 + 0.00) = 59.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	0	0.12	69.15	0.00	-4.89	-4.55	0.00	0.00	0.00	59.70

Segment Leq : 59.70 dBA

Total Leq All Segments: 63.59 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 53.71 + 0.00) = 53.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	0	0.12	61.55	0.00	-3.29	-4.55	0.00	0.00	0.00	53.71

Segment Leq : 53.71 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 52.11 + 0.00) = 52.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	0	0.12	61.55	0.00	-4.89	-4.55	0.00	0.00	0.00	52.11

Segment Leq : 52.11 dBA

Total Leq All Segments: 55.99 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 63.59  
(NIGHT): 55.99

Filename: bap2.te                      Time Period: Day/Night 16/8 hours  
Description: building a p2 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -85.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 20.50 / 20.50 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -85.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 32.00 / 32.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 64.10 + 0.00) = 64.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	0	0.12	69.15	0.00	-1.52	-3.53	0.00	0.00	0.00	64.10

Segment Leq : 64.10 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 61.94 + 0.00) = 61.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	0	0.12	69.15	0.00	-3.69	-3.53	0.00	0.00	0.00	61.94

Segment Leq : 61.94 dBA

Total Leq All Segments: 66.16 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 56.51 + 0.00) = 56.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	0	0.12	61.55	0.00	-1.52	-3.53	0.00	0.00	0.00	56.51

Segment Leq : 56.51 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 54.34 + 0.00) = 54.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	0	0.12	61.55	0.00	-3.69	-3.53	0.00	0.00	0.00	54.34

Segment Leq : 54.34 dBA

Total Leq All Segments: 58.57 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 66.16  
(NIGHT): 58.57

Filename: bap3.te                      Time Period: Day/Night 16/8 hours  
Description: building a p3 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 19.50 / 19.50 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 31.00 / 31.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

RR

Road data, segment # 3: Briar Hill Drive (day/night)

-----  
Car traffic volume : 6477/563 veh/TimePeriod  
Medium truck volume : 515/45 veh/TimePeriod  
Heavy truck volume : 368/32 veh/TimePeriod  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Briar Hill Drive (day/night)

-----  
Angle1 Angle2 : -90.00 deg -65.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 15.00 / 15.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

RR

Results segment # 1: Heron EB (day)

-----

Source height = 1.50 m

ROAD (0.00 + 67.54 + 0.00) = 67.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.12	69.15	0.00	-1.28	-0.34	0.00	0.00	0.00	67.54

Segment Leq : 67.54 dBA

RR

Results segment # 2: Heron WB (day)

-----

Source height = 1.50 m

ROAD (0.00 + 65.28 + 0.00) = 65.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.12	69.15	0.00	-3.53	-0.34	0.00	0.00	0.00	65.28

Segment Leq : 65.28 dBA

RR

Results segment # 3: Briar Hill Drive (day)

-----

Source height = 1.50 m

ROAD (0.00 + 56.25 + 0.00) = 56.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-65	0.12	65.75	0.00	0.00	-9.50	0.00	0.00	0.00	56.25

Segment Leq : 56.25 dBA

Total Leq All Segments: 69.76 dBA

RR

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 59.94 + 0.00) = 59.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.12	61.55	0.00	-1.28	-0.34	0.00	0.00	0.00	59.94

Segment Leq : 59.94 dBA

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 57.69 + 0.00) = 57.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.12	61.55	0.00	-3.53	-0.34	0.00	0.00	0.00	57.69

Segment Leq : 57.69 dBA

Results segment # 3: Briar Hill Drive (night)

Source height = 1.50 m

ROAD (0.00 + 48.65 + 0.00) = 48.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-65	0.12	58.15	0.00	0.00	-9.50	0.00	0.00	0.00	48.65

Segment Leq : 48.65 dBA

Total Leq All Segments: 62.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.76  
(NIGHT): 62.17

Filename: bap4.te                      Time Period: Day/Night 16/8 hours  
Description: building a p4 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : 0.00 deg 40.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 55.00 / 55.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : 0.00 deg 40.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 66.50 / 66.50 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 56.25 + 0.00) = 56.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	40	0.12	69.15	0.00	-6.32	-6.58	0.00	0.00	0.00	56.25

Segment Leq : 56.25 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 55.33 + 0.00) = 55.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	40	0.12	69.15	0.00	-7.24	-6.58	0.00	0.00	0.00	55.33

Segment Leq : 55.33 dBA

Total Leq All Segments: 58.82 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	40	0.12	61.55	0.00	-6.32	-6.58	0.00	0.00	0.00	48.66

Segment Leq : 48.66 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 47.73 + 0.00) = 47.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	40	0.12	61.55	0.00	-7.24	-6.58	0.00	0.00	0.00	47.73

Segment Leq : 47.73 dBA

Total Leq All Segments: 51.23 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 58.82  
(NIGHT): 51.23



Filename: bap5.te                      Time Period: Day/Night 16/8 hours  
Description: building a p5 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : 0.00 deg 20.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 90.50 / 90.50 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : 0.00 deg 20.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 102.00 / 102.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 50.85 + 0.00) = 50.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.12	69.15	0.00	-8.74	-9.55	0.00	0.00	0.00	50.85

Segment Leq : 50.85 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 50.27 + 0.00) = 50.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.12	69.15	0.00	-9.33	-9.55	0.00	0.00	0.00	50.27

Segment Leq : 50.27 dBA

Total Leq All Segments: 53.58 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 43.26 + 0.00) = 43.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.12	61.55	0.00	-8.74	-9.55	0.00	0.00	0.00	43.26

Segment Leq : 43.26 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 42.67 + 0.00) = 42.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.12	61.55	0.00	-9.33	-9.55	0.00	0.00	0.00	42.67

Segment Leq : 42.67 dBA

Total Leq All Segments: 45.99 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 53.58  
(NIGHT): 45.99

Filename: bbp6.te                      Time Period: Day/Night 16/8 hours  
Description: building b p6 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -15.00 deg 10.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 66.00 / 66.00 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -15.00 deg 10.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 77.50 / 77.50 m  
Receiver height : 19.50 / 19.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 53.36 + 0.00) = 53.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	10	0.12	69.15	0.00	-7.21	-8.58	0.00	0.00	0.00	53.36

Segment Leq : 53.36 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 52.58 + 0.00) = 52.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	10	0.12	69.15	0.00	-7.99	-8.58	0.00	0.00	0.00	52.58

Segment Leq : 52.58 dBA

Total Leq All Segments: 56.00 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 45.77 + 0.00) = 45.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	10	0.12	61.55	0.00	-7.21	-8.58	0.00	0.00	0.00	45.77

Segment Leq : 45.77 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 44.99 + 0.00) = 44.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	10	0.12	61.55	0.00	-7.99	-8.58	0.00	0.00	0.00	44.99

Segment Leq : 44.99 dBA

Total Leq All Segments: 48.41 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 56.00  
(NIGHT): 48.41

Filename: bcp7.te                      Time Period: Day/Night 16/8 hours  
Description: building c p7 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 29.50 / 29.50 m  
Receiver height : 16.50 / 16.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 41.00 / 41.00 m  
Receiver height : 16.50 / 16.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 62.02 + 0.00) = 62.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	69.15	0.00	-3.55	-3.57	0.00	0.00	0.00	62.02

Segment Leq : 62.02 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 60.29 + 0.00) = 60.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	69.15	0.00	-5.28	-3.57	0.00	0.00	0.00	60.29

Segment Leq : 60.29 dBA

Total Leq All Segments: 64.25 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 54.43 + 0.00) = 54.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	61.55	0.00	-3.55	-3.57	0.00	0.00	0.00	54.43

Segment Leq : 54.43 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	61.55	0.00	-5.28	-3.57	0.00	0.00	0.00	52.69

Segment Leq : 52.69 dBA

Total Leq All Segments: 56.66 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 64.25  
(NIGHT): 56.66

Filename: bcp8.te                      Time Period: Day/Night 16/8 hours  
Description: building c p8 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 20.50 / 20.50 m  
Receiver height : 16.50 / 16.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 32.00 / 32.00 m  
Receiver height : 16.50 / 16.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

-----

Source height = 1.50 m

ROAD (0.00 + 63.93 + 0.00) = 63.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	69.15	0.00	-1.64	-3.57	0.00	0.00	0.00	63.93

Segment Leq : 63.93 dBA

FF

Results segment # 2: Heron WB (day)

-----

Source height = 1.50 m

ROAD (0.00 + 61.59 + 0.00) = 61.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	69.15	0.00	-3.98	-3.57	0.00	0.00	0.00	61.59

Segment Leq : 61.59 dBA

Total Leq All Segments: 65.93 dBA

FF

Results segment # 1: Heron EB (night)

-----

Source height = 1.50 m

ROAD (0.00 + 56.34 + 0.00) = 56.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	61.55	0.00	-1.64	-3.57	0.00	0.00	0.00	56.34

Segment Leq : 56.34 dBA

FF

Results segment # 2: Heron WB (night)

-----

Source height = 1.50 m

ROAD (0.00 + 54.00 + 0.00) = 54.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.21	61.55	0.00	-3.98	-3.57	0.00	0.00	0.00	54.00

Segment Leq : 54.00 dBA

Total Leq All Segments: 58.34 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY) : 65.93  
(NIGHT) : 58.34



Filename: bcp9.te                      Time Period: Day/Night 16/8 hours  
Description: building c p9 indoor

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 19.50 / 19.50 m  
Receiver height : 16.50 / 16.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00



Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 31.00 / 31.00 m  
Receiver height : 16.50 / 16.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

ROAD (0.00 + 67.21 + 0.00) = 67.21 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.21	69.15	0.00	-1.38	-0.56	0.00	0.00	0.00	67.21

Segment Leq : 67.21 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

ROAD (0.00 + 64.77 + 0.00) = 64.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.21	69.15	0.00	-3.82	-0.56	0.00	0.00	0.00	64.77

Segment Leq : 64.77 dBA

Total Leq All Segments: 69.17 dBA

FF

Results segment # 1: Heron EB (night)

Source height = 1.50 m

ROAD (0.00 + 59.61 + 0.00) = 59.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.21	61.55	0.00	-1.38	-0.56	0.00	0.00	0.00	59.61

Segment Leq : 59.61 dBA

FF

Results segment # 2: Heron WB (night)

Source height = 1.50 m

ROAD (0.00 + 57.18 + 0.00) = 57.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.21	61.55	0.00	-3.82	-0.56	0.00	0.00	0.00	57.18

Segment Leq : 57.18 dBA

Total Leq All Segments: 61.57 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 69.17  
(NIGHT): 61.57

Outdoor Living Area (OLA)

Filename: olal.te                      Time Period: Day/Night 16/8 hours  
Description: olal - Building 'A' 7th Floor Terrace

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 31.50 / 31.50 m  
Receiver height : 1.50 / 4.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 18.00 m  
Barrier receiver distance : 12.00 / 12.00 m  
Source elevation : 94.20 m  
Receiver elevation : 112.75 m  
Barrier elevation : 94.75 m  
Reference angle : 0.00

RR

Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0

```

Surface                :      1      (Absorptive ground surface)
Receiver source distance : 43.00 / 43.00 m
Receiver height         :   1.50 / 4.50 m
Topography              :      2      (Flat/gentle slope; with barrier)
Barrier angle1          : -90.00 deg   Angle2 : 90.00 deg
Barrier height          :   18.00 m
Barrier receiver distance : 12.00 / 12.00 m
Source elevation         :   94.35 m
Receiver elevation       :  112.75 m
Barrier elevation        :   94.75 m
Reference angle          :    0.00

```

FF

Road data, segment # 3: Briar Hill Drive (day/night)

```

-----
Car traffic volume   : 6477/563   veh/TimePeriod
Medium truck volume  : 515/45    veh/TimePeriod
Heavy truck volume   : 368/32    veh/TimePeriod
Posted speed limit   :   50 km/h
Road gradient         :    1 %
Road pavement        :    1 (Typical asphalt or concrete)

```

Data for Segment # 3: Briar Hill Drive (day/night)

```

-----
Angle1  Angle2          : -90.00 deg   -55.00 deg
Wood depth                :    0      (No woods.)
No of house rows          :    0 / 0
Surface                   :    1      (Absorptive ground surface)
Receiver source distance   : 24.50 / 24.50 m
Receiver height            :   1.50 / 4.50 m
Topography                 :    2      (Flat/gentle slope; with barrier)
Barrier angle1             : -90.00 deg   Angle2 : -55.00 deg
Barrier height             :   18.00 m
Barrier receiver distance   : 11.50 / 11.50 m
Source elevation           :   93.95 m
Receiver elevation         :  111.70 m
Barrier elevation          :   93.70 m
Reference angle            :    0.00

```

FF

Results segment # 1: Heron EB (day)

Source height = 1.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver    ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !         1.50 !        12.43 !         107.18

```

ROAD (0.00 + 51.08 + 0.00) = 51.08 dBA

```

-----
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
   -90    90   0.00  69.15   0.00  -3.22   0.00   0.00   0.00 -14.85  51.08
-----

```

Segment Leq : 51.08 dBA

FF

Results segment # 2: Heron WB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50	!	1.50	!
		14.36	!
			109.11

ROAD (0.00 + 52.48 + 0.00) = 52.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.15	0.00	-4.57	0.00	0.00	0.00	-12.09	52.48

Segment Leq : 52.48 dBA

Results segment # 3: Briar Hill Drive (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50	!	1.50	!
		11.17	!
			104.87

ROAD (0.00 + 43.29 + 0.00) = 43.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-55	0.00	65.75	0.00	-2.13	-7.11	0.00	0.00	-13.22	43.29

Segment Leq : 43.29 dBA

Total Leq All Segments: 55.14 dBA

Results segment # 1: Heron EB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50	!	4.50	!
		14.29	!
			109.04

ROAD (0.00 + 46.64 + 0.00) = 46.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.55	0.00	-3.22	0.00	0.00	0.00	-11.69	46.64

Segment Leq : 46.64 dBA

Results segment # 2: Heron WB (night)

Source height = 1.50 m

Barrier height for grazing incidence

$$\text{ROAD } (0.00 + 49.69 + 0.00) = 49.69 \text{ dBA}$$

Segment Leq : 49.69 dBA

FF

Source height = 1.50 m

Barrier height for grazing incidence

Source	Receiver	Barrier	Elevation of
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

$$\text{ROAD } (0.00 + 37.84 + 0.00) = 37.84 \text{ dBA}$$

Segment Leq : 37.84 dBA

Total Leg All Segments: 51.62 dBA

FF

TOTAL Leg FROM ALL SOURCES (DAY): 55.14

FF

FF

Filename: ola2.te                      Time Period: Day/Night 16/8 hours  
Description: ola 2 - Building 'B' 8th Floor Terrace

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 69.50 / 69.50 m  
Receiver height : 1.50 / 4.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 21.00 m  
Barrier receiver distance : 44.50 / 44.50 m  
Source elevation : 94.95 m  
Receiver elevation : 116.25 m  
Barrier elevation : 95.25 m  
Reference angle : 0.00

RR

Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0



```

Surface                :      1      (Absorptive ground surface)
Receiver source distance : 81.00 / 81.00 m
Receiver height         :   1.50 / 4.50 m
Topography              :      2      (Flat/gentle slope; with barrier)
Barrier angle1          : -90.00 deg   Angle2 : 90.00 deg
Barrier height          : 21.00 m
Barrier receiver distance : 44.50 / 44.50 m
Source elevation        : 95.00 m
Receiver elevation       : 116.25 m
Barrier elevation        : 95.25 m
Reference angle         :   0.00

```

RR

Results segment # 1: Heron EB (day)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	1.50	!
		8.86	!
			104.11

ROAD (0.00 + 45.17 + 0.00) = 45.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.15	0.00	-6.66	0.00	0.00	0.00	-17.33	45.17

-----

Segment Leq : 45.17 dBA

RR

Results segment # 2: Heron WB (day)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	1.50	!
		10.82	!
			106.07

ROAD (0.00 + 45.64 + 0.00) = 45.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.15	0.00	-7.32	0.00	0.00	0.00	-16.19	45.64

-----

Segment Leq : 45.64 dBA

Total Leq All Segments: 48.42 dBA

RR

Results segment # 1: Heron EB (night)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
	!		!

-----+-----+-----+-----  
1.50 ! 4.50 ! 9.94 ! 105.19

ROAD (0.00 + 38.04 + 0.00) = 38.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.55	0.00	-6.66	0.00	0.00	0.00	-16.85	38.04

-----

Segment Leq : 38.04 dBA

RR  
Results segment # 2: Heron WB (night)  
-----

Source height = 1.50 m

Barrier height for grazing incidence  
-----

Source	!	Receiver	!	Barrier	!	Elevation of
Height	(m)	Height	(m)	Height	(m)	Barrier Top (m)
1.50	!	4.50	!	12.17	!	107.42

ROAD (0.00 + 38.84 + 0.00) = 38.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.55	0.00	-7.32	0.00	0.00	0.00	-15.39	38.84

-----

Segment Leq : 38.84 dBA

Total Leq All Segments: 41.47 dBA

RR  
  
TOTAL Leq FROM ALL SOURCES (DAY): 48.42  
(NIGHT): 41.47

RR  
RR

Filename: ola3.te                      Time Period: Day/Night 16/8 hours  
Description: ola3 - Building 'C' 7th Floor Terrace

Road data, segment # 1: Heron EB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Heron EB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 25.50 / 25.50 m  
Receiver height : 1.50 / 4.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 18.00 m  
Barrier receiver distance : 6.00 / 6.00 m  
Source elevation : 94.95 m  
Receiver elevation : 113.25 m  
Barrier elevation : 95.25 m  
Reference angle : 0.00

RR

Road data, segment # 2: Heron WB (day/night)

-----  
Car traffic volume : 14168/1232 veh/TimePeriod \*  
Medium truck volume : 1127/98 veh/TimePeriod \*  
Heavy truck volume : 805/70 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17500  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Heron WB (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0

```

Surface                :      1      (Absorptive ground surface)
Receiver source distance : 37.00 / 37.00 m
Receiver height         :   1.50 / 4.50 m
Topography              :      2      (Flat/gentle slope; with barrier)
Barrier angle1          : -90.00 deg   Angle2 : 90.00 deg
Barrier height          :   18.00 m
Barrier receiver distance :   6.00 / 6.00 m
Source elevation        :   95.00 m
Receiver elevation       :  113.25 m
Barrier elevation        :   95.25 m
Reference angle         :    0.00

```

RR

Results segment # 1: Heron EB (day)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	1.50	!
		15.19	!
			110.44

ROAD (0.00 + 55.24 + 0.00) = 55.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.15	0.00	-2.30	0.00	0.00	0.00	-11.60	55.24

Segment Leq : 55.24 dBA

RR

Results segment # 2: Heron WB (day)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	1.50	!
		16.54	!
			111.79

ROAD (0.00 + 56.80 + 0.00) = 56.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.15	0.00	-3.92	0.00	0.00	0.00	-8.43	56.80

Segment Leq : 56.80 dBA

Total Leq All Segments: 59.10 dBA

RR

Results segment # 1: Heron EB (night)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
----------------------	----------------------------	---------------------------	-------------------------------------

-----+-----+-----+-----  
1.50 ! 4.50 ! 17.49 ! 112.74

ROAD (0.00 + 53.82 + 0.00) = 53.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.55	0.00	-2.30	0.00	0.00	0.00	-5.43	53.82

-----

Segment Leq : 53.82 dBA

RR  
Results segment # 2: Heron WB (night)  
-----

Source height = 1.50 m

Barrier height for grazing incidence  
-----

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	19.05	114.30

ROAD (0.00 + 54.09 + 0.00) = 54.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.55	0.00	-3.92	0.00	0.00	0.00	-1.69	55.94*
-90	90	0.57	61.55	0.00	-6.16	-1.30	0.00	0.00	0.00	54.09

-----

\* Bright Zone !

Segment Leq : 54.09 dBA

Total Leq All Segments: 56.97 dBA

RR  
  
TOTAL Leq FROM ALL SOURCES (DAY): 59.10  
                                  (NIGHT): 56.97

RR  
RR

## **Appendix B –** Architectural Drawings





No.	Date	Émis pour / Object
1	2021-11-16	COORDINATION
3	2021-12-20	SITE PLAN CONTROL

Ingenieur / Engineer  
(Mécanique & Électrique / Mechanical & Electrical)

Ingenieur / Engineer  
(Structure / Structure)

Client / Client

Architecte / Architect  
figuri  
3550, Saint-Armand O.  
Montréal QC H4C 1A9  
T. 514 861-5122  
www.figuri.ca

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Scale / Scale  
Note:  
L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.  
Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Project / Project

HERONGATE - HG5 - BUILDING A

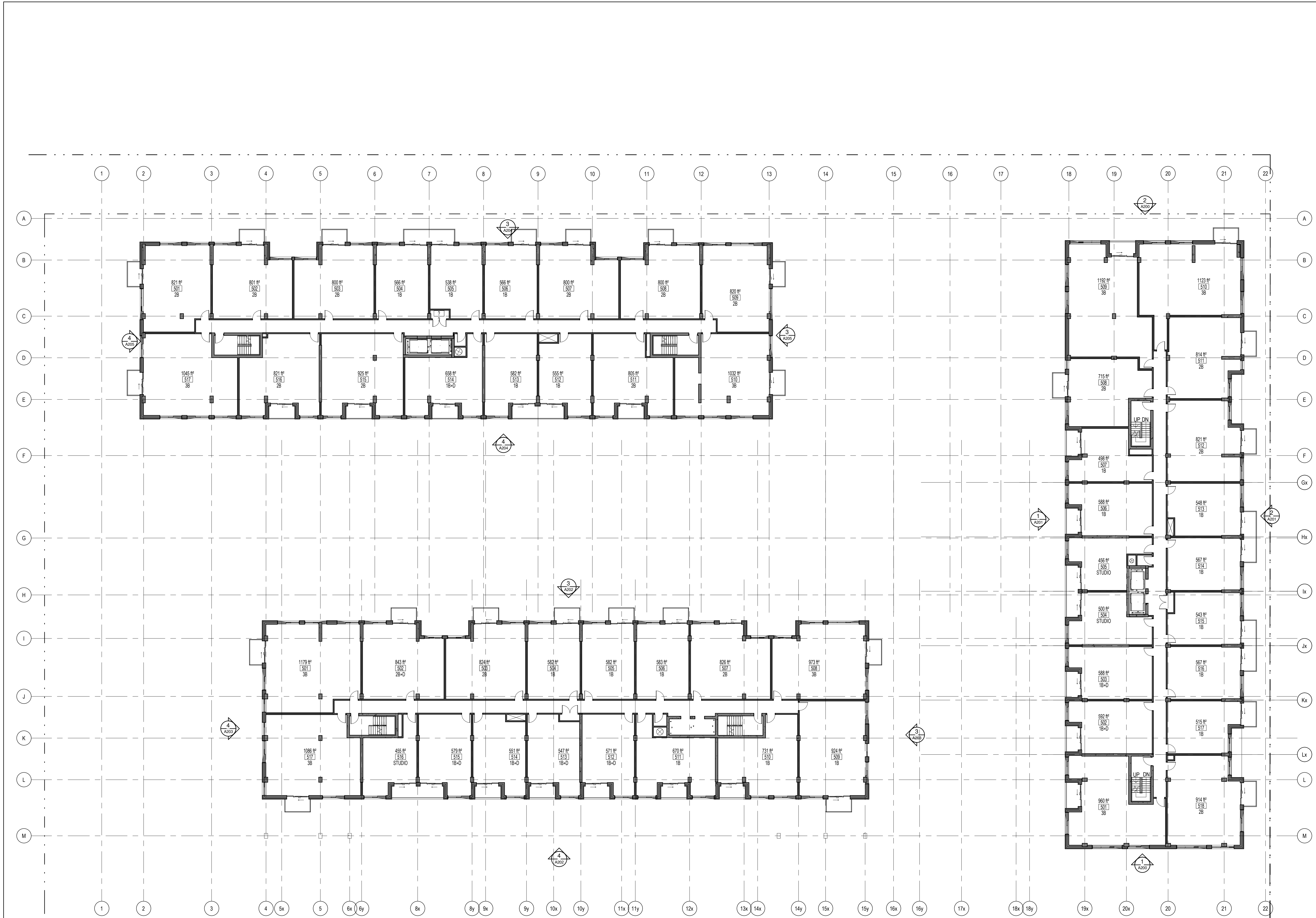
ADRESSE

Titre / Title

Dessiné par / Drawn by  
LK  
No. projet / Project number  
2135  
Vérifié par / Verified by  
MD  
No. dessin / Drawing number  
Échelle / Scale  
1 : 125  
Date de création du dessin / Drawing creation date  
05/18/18

A200





No. Date Émis pour / Object  
3 2021-12-20 SITE PLAN CONTROL

Ingenieur / Engineer  
(Mécanique & Électrique / Mechanical & Electrical)

Ingenieur / Engineer  
(Structure / Structure)

Client / Client

Architecte / Architect

Collectif d'architectes

Fig. 1  
3550, Saint-Armande O.  
Montréal QC H4C 1A9  
T. 514 861-9122

**figuri**

Fig. 2  
190 Somerset St W #206  
Ottawa ON K2P 0J4  
T. 613 696-6122

www.figuri.ca

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Seau / Seal

Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et avant immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

**HERONGATE - HG5 -  
BUILDING A**

Adresse

Titre / Title

**Fifth/ Sixth Floor Plan**

Dessiné par / Drawn by

No. projet / Project number

AUTHOR

2135

Vérifié par / Verified by

No. dessin / Drawing number

CHECKER

Revision /

Echelle / Scale

3

1 : 200

Date de création du dessin /

Drawing creation date

11/18/21

**A123**



**Appendix C –**  
Sound Transmission Class (STC)  
Calculations

### Daytime Conditions - Building 'A' - North Façade - Top Floor Unit (Northeast Corner Unit)

Reverse Evaluation of Sound Transmission Class (STC) for Building Components

<b>1.0</b>	Free field sound level	<u>69.76</u> dBA	Noise source
	Correction for reflections	<u>3</u> dBA	Road ▼
	Outdoor sound level	<u>72.76</u> dBA	Indoor Quarters
	Indoor sound level (Daytime)	<u>45</u> dBA	Living ▼
	Required Noise Reduction (NR)	<u>27.76</u> dB	Subtract indoor from outdoor sound level
<b>2.0</b>	Sound angle of incidence	0 to 90 degrees ▼	C <sub>1</sub> Correction from Table 7.7 <u>0</u> dB
			Sum <u>27.76</u> dB

	Component:	Wall ▼	STC <u>50</u> dB
<b>3.0</b>	Noise spectrum type	D - Mixed Road Traffic, Distant Aircraft ▼	C <sub>4</sub> from Table 7.10 <u>7</u> dB
	Component category	d. Sealed thick window, or exterior wall, or roof/ceiling ▼	Correction <u>-7</u> dB
<b>4.0</b>	Room floor area	<u>104.3</u> m <sup>2</sup>	29.62608 % of floor area
	Component Area	<u>30.9</u> m <sup>2</sup>	
	Room absorption category	Intermediate ▼	C <sub>3</sub> from Table 7.9 <u>-8</u> dB
			Correction <u>8</u> dB
<b>5.0</b>	Noise reduction if only this component transmits sound		<u>51</u> dB
<b>6.0</b>	Required noise reduction (from Step 1)		<u>28</u> dB
<b>7.0</b>	Term C <sub>2</sub> : Subtract the Required NR from the Noise Reduction for this component		<u>23</u> dB
<b>8.0</b>	Determine from Table 7.8 the corresponding value of total transmitted sound energy		<u>5</u> %

	Component:	Window ▼	After step 2 <u>27.76</u> dB
<b>9.0</b>	Transmits	95 % of total sound energy	C <sub>2</sub> from Table 7.8 <u>0</u> dB
<b>10.0</b>	Room floor area	<u>104.3</u> m <sup>2</sup>	12.08054 % of floor area
	Component Area	<u>12.6</u> m <sup>2</sup>	
	Room absorption category	Intermediate ▼	C <sub>3</sub> from Table 7.9 <u>-8</u> dB
<b>11.0</b>	Noise spectrum type	D - Mixed Road Traffic, Distant Aircraft ▼	C <sub>4</sub> from Table 7.10 <u>7</u> dB
	Component category	d. Sealed thick window, or exterior wall, or roof/ceil ▼	
	STC=NR+C <sub>1</sub> +C <sub>2</sub> +C <sub>3</sub> +C <sub>4</sub>		Required STC <u>27</u>

Tables from Environmental Noise Assessment in Land Use Planning, dated 1999, published by the MOE

## Nighttime Conditions - Building 'A' - North Facade - Top Floor (Northeast Corner Unit)

Reverse Evaluation of Sound Transmission Class (STC) for Building Components

<b>1.0</b>	Free field sound level	<u>62.17</u> dBA	Noise source
	Correction for reflections	<u>3</u> dBA	Road ▼
	Outdoor sound level	<u>65.17</u> dBA	Indoor Quarters
	Indoor sound level (Night time)	<u>40</u> dBA	Sleeping ▼
	Required Noise Reduction (NR)	<u>25.17</u> dB	Subtract indoor from outdoor sound level
<b>2.0</b>	Sound angle of incidence	<u>0 to 90 degrees</u> ▼	C <sub>1</sub> Correction from Table 7.7 <u>0</u> dB
			Sum <u>25.17</u> dB

	Component:	<u>Wall</u> ▼	STC <u>50</u> dB
<b>3.0</b>	Noise spectrum type	<u>D - Mixed Road Traffic, Distant Aircraft</u> ▼	C <sub>4</sub> from Table 7.10 <u>7</u> dB
	Component category	<u>d. Sealed thick window, or exterior wall, or roof/ceiling</u> ▼	Correction <u>-7</u> dB
<b>4.0</b>	Room floor area	<u>104.3</u> m <sup>2</sup>	29.62608 % of floor area
	Component Area	<u>30.9</u> m <sup>2</sup>	
	Room absorption category	<u>Intermediate</u> ▼	C <sub>3</sub> from Table 7.9 <u>-8</u> dB
			Correction <u>8</u> dB
<b>5.0</b>	Noise reduction if only this component transmits sound		<u>51</u> dB
<b>6.0</b>	Required noise reduction (from Step 1)		<u>25</u> dB
<b>7.0</b>	Term C <sub>2</sub> : Subtract the Required NR from the Noise Reduction for this component		<u>26</u> dB
<b>8.0</b>	Determine from Table 7.8 the corresponding value of total transmitted sound energy		<u>5</u> %

	Component:	<u>Window</u> ▼	After step 2 <u>25.17</u> dB
<b>9.0</b>	Transmits	<u>95</u> % of total sound energy	C <sub>2</sub> from Table 7.8 <u>0</u> dB
<b>10.0</b>	Room floor area	<u>104.3</u> m <sup>2</sup>	12.08054 % of floor area
	Component Area	<u>12.6</u> m <sup>2</sup>	
	Room absorption category	<u>Intermediate</u> ▼	C <sub>3</sub> from Table 7.9 <u>-8</u> dB
<b>11.0</b>	Noise spectrum type	<u>D - Mixed Road Traffic, Distant Aircraft</u> ▼	C <sub>4</sub> from Table 7.10 <u>7</u> dB
	Component category	<u>d. Sealed thick window, or exterior wall, or roof/ceiling</u> ▼	
	STC=NR+C <sub>1</sub> +C <sub>2</sub> +C <sub>3</sub> +C <sub>4</sub>		Required STC <u>24</u>

Tables from Environmental Noise Assessment in Land Use Planning, dated 1999, published by the MOE